Location-based Solar Tracker (ESP)

Locally-based client, John Ihle [ljihle@rrt.net] Alan Grossman
ECE Advisor Mark Schroeder Nick Blonigen

Design and develop a controller that can be retrofitted to a dual-axis solar photovoltaic tracker system. The device inputs should be the time of day and a person's latitude and longitude to determine and control optimal panel positioning. Wireless communication with the system might also be required. The system should be relatively inexpensive and possibly be adaptable to fit other tracker systems.

Currently the user has a light sensors that he has been having to replace and he is looking for a suitable replacement. He currently has two solar panels that he would like to have our system implemented on one of them and compare the efficiencies of the photo-sensor versus a gps tracking system. He had expressed the need for want a automatic and also a manual control of the location of the panels one of the main components required in our project as requested by the client is to be able to input a longitude and latitude and have the panels move to the appropriate location. Bulleted below are some more specific details.

- Currently the system will have to be compatible with both single and dual axis panels
- Current Power that has to be compatible with is a 24V system
- The Panels specifically configured for are Wattsun AZ-225 Azimuth gear drive
- The Panels Have the capability to go 85 degrees to flat and no limit on the horizontal axis rotation
- Desired input is PC based with the possibility of wireless
- Automatic and manual modes desired
- The ability to switch between single and dual axis mode also desired
- The desired budget has to be within reason
- Maximum efficiency is desired
- High grade equipment is desired to withstand extreme conditions
- John Would like to be involved in the Process as much as Possible

This project is scheduled to be implemented by the spring of 2013 and these are the main requirements desired for the controller design the rest of the infrastructure is in place e.g. motors panels ect. This should comply with both parties and meet these requirements. Further editions can be made in the future if both parties agree.